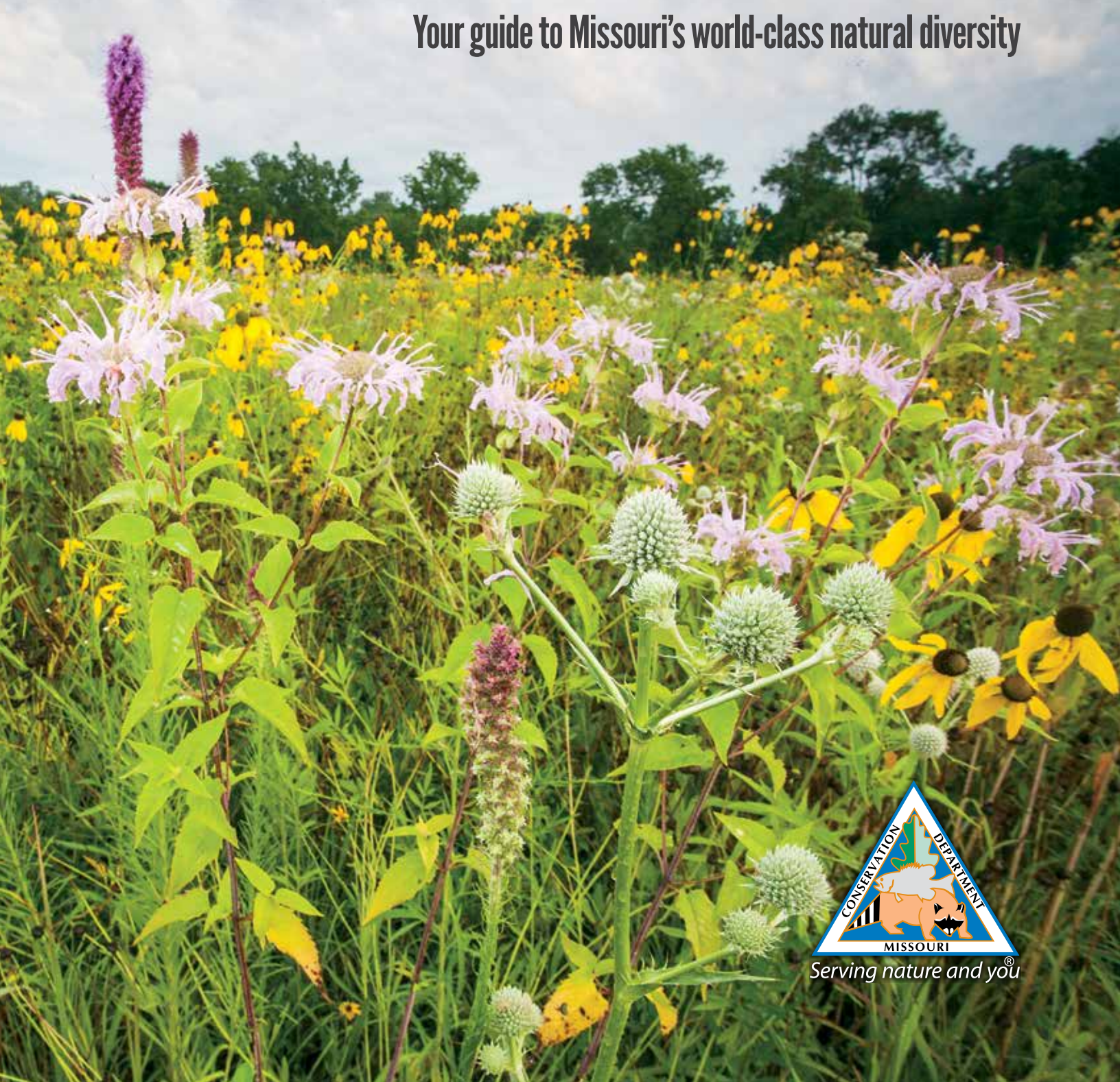


# Show-Me Natural Communities

Your guide to Missouri's world-class natural diversity



Cover photo:  
Wild bergamot and many other wildflowers  
bloom on a prairie near Jefferson City.  
Photo by Noppadol Paothong



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Published by the Missouri Department of Conservation, PO Box 180, Jefferson City, Missouri, 65102-1080

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DAVID STONNER

Igneous glades in the  
St. Francois Mountains  
Natural area

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## World-Class Natural Diversity

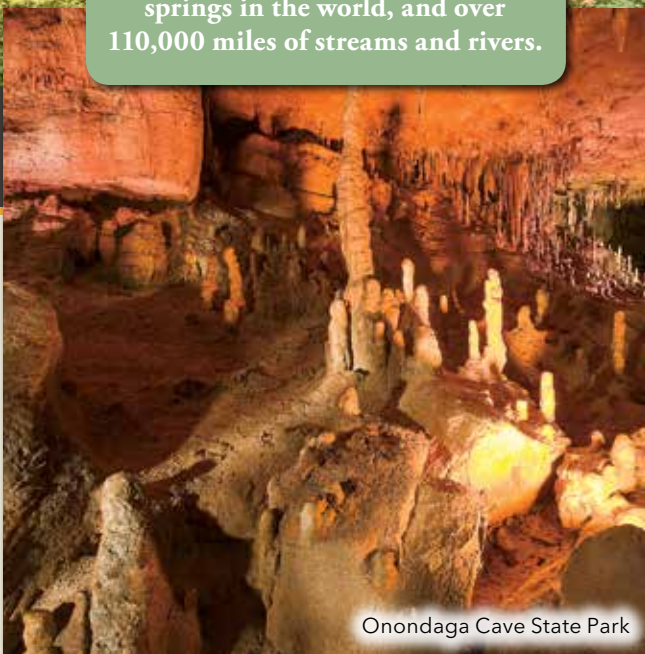
Missourians love to hunt, fish, and enjoy nature, and most of us know flowering dogwood, white-tailed deer, and largemouth bass when we see them. But these species are just a tiny fraction of the thousands of different plants and animals that call Missouri home. The Show-Me State covers only about 2 percent of the landmass of the continental United States, but it ranks 21st in the nation in the number of native plants and animals that live here. In fact, more species of native plants are found here than in all of Alaska. Missouri's treasury of native plants and animals is truly world-class.





The nation's largest remaining stretch of tallgrass prairie east of Kansas occurs in Missouri.

Missouri boasts over 7,000 caves, some of the largest freshwater springs in the world, and over 110,000 miles of streams and rivers.



Onondaga Cave State Park



Prairie blazing star at Stony Point Prairie

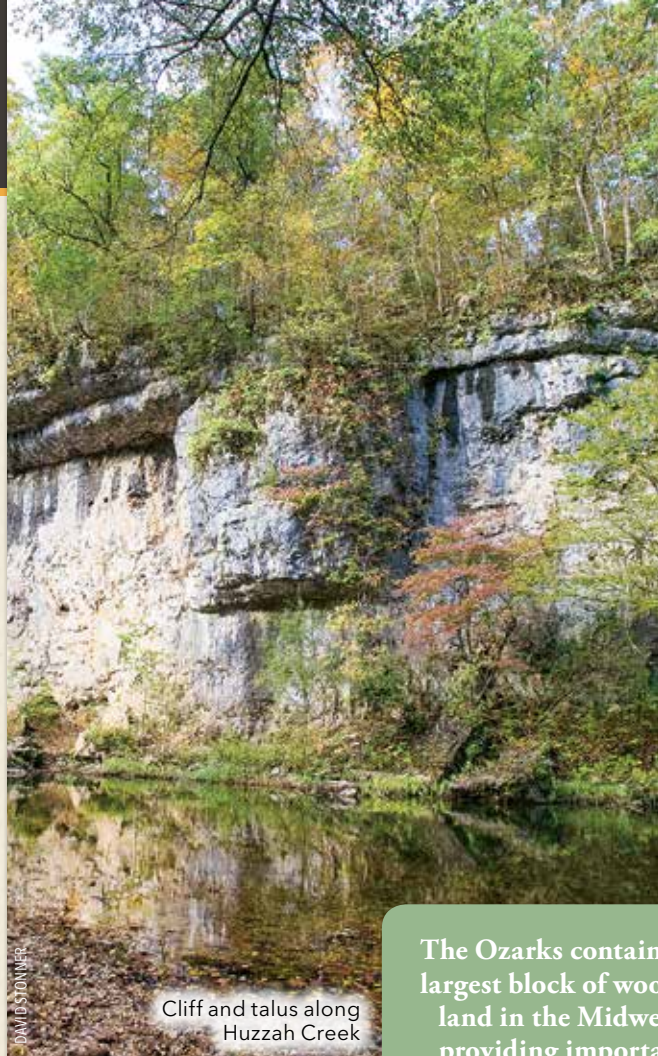


## The Meeting of Mighty Forces Shaped Missouri's Natural Heritage

Why does Missouri have such rich natural diversity? Because it has so many different types of natural places, from prairies to forests to caves. This diversity of natural places is the result of Missouri's location where the nation's great grasslands, rugged Ozarks, and the broad floodplain of the Mississippi River converge. The meeting of these mighty influences creates specialized niches and nooks that serve the needs of many different plants and animals.

From the widest prairie to the highest Ozark peak or most secluded Bootheel swamp, these specific habitats and the plants and animals that rely on them are known as natural communities. Each type of natural community has its own combination of soils, terrain, geology, and climate. Many of Missouri's original natural communities were reduced or degraded during European settlement times, but conservation efforts begun in the 20th century are preserving and restoring them.

With a little practice, you can learn to identify Missouri's natural communities when you see them. You can even learn to restore them on your own property or favorite outdoor places.



DAVID STONER

Cliff and talus along  
Huzzah Creek

NOPPADOL PHOTONG

Ozark oak-pine forest at Peck Ranch Conservation Area

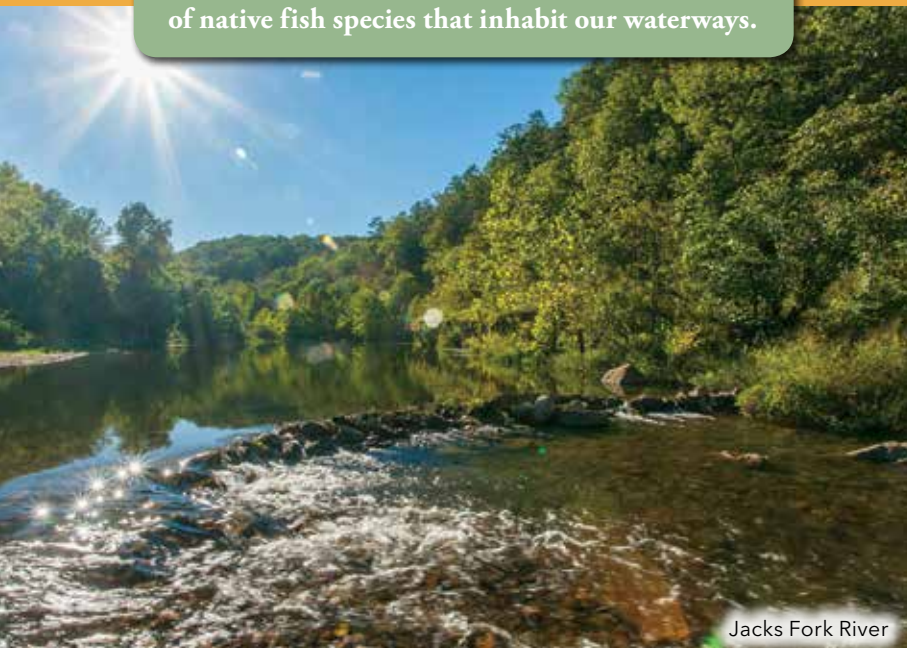
The Ozarks contain the largest block of wooded land in the Midwest, providing important breeding habitat for dozens of migratory songbirds and home to a great diversity of amphibians and reptiles.



NOPPADOL PHOTONG



Missouri ranks No. 9 in the nation in the number of native fish species that inhabit our waterways.



Jacks Fork River



NOPHADOI-PAOTHONG

Compass plant on southwest Missouri glade

## Your Guide to Missouri's Natural Communities

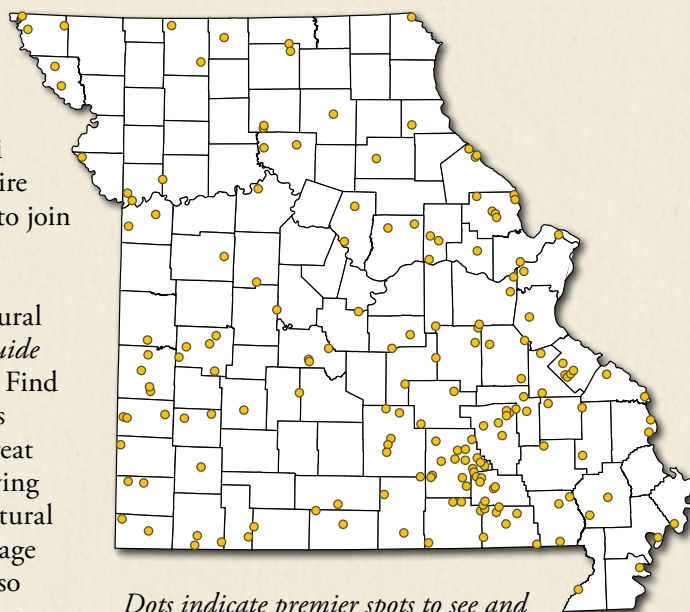
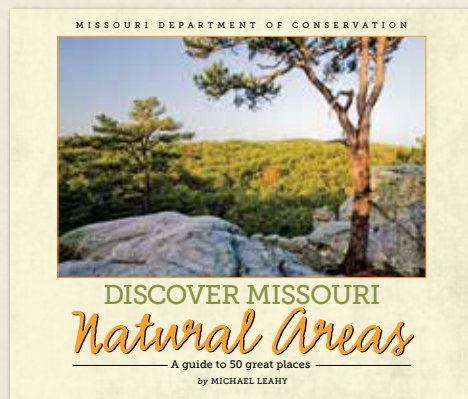
Ecologists have identified more than 100 natural community subtypes in Missouri. But to make it easy for you to identify, enjoy, and conserve them, we've grouped them into seven primary categories. We hope you'll use this guide to get acquainted with our state's fascinating natural communities, enjoy visiting them, and work with MDC staff or another conservation organization to restore them on your land or in your community.

## Explore More, Conserve More

The best of the best, and often the last, examples of Missouri's natural communities are conserved in the state's system of designated natural areas. Scattered throughout the state, these areas resemble habitats as they existed in Missouri before 1800. They're fun to visit, and studying them can inspire you to restore native plants and wildlife where you live — or to join a local conservation group.

For a handy, richly detailed guide to exploring Missouri's natural areas, pick up a copy of *Discover Missouri Natural Areas: A Guide to 50 Great Places*. Find out how to get this

and many more great resources for enjoying and conserving natural communities on Page 20. There you'll also find a small selection of the many volunteer organizations dedicated to conserving Missouri's natural communities.



*Dots indicate premier spots to see and enjoy Missouri's natural communities.*





Visit in the  
cool of the evening

# Grasslands: Prairies and Savannas

Native grasslands support thousands of different native plants and animals, and they soak up rainwater like a sponge. Missouri's native grasslands have evolved over the past 11,000 years. These communities developed under the forces of drought, fire, and grazing by bison and elk. However, most of the grasslands we see in Missouri today are livestock pastures of nonnative grasses, offering little value for wildlife, soil building, or for absorbing precipitation.

Missouri has two main types of native grasslands: tallgrass prairie and savanna. Prairies are perennial grasslands with few trees and scattered shrubs. Prairie plants thrive under full sunlight. Missouri has several unique prairie types ranging from **loess hill prairies** to **glaciated prairies** and **unglaciated prairies**, and even **sand** and **wet prairies**.

Savannas are the transition communities between prairies and woodlands. Trees do occur on savannas, but they are scarce and generally widely spaced across the landscape.

## Prairies and Savannas Work for Plants, Animals, and People

- Home to a great diversity of plants and animals, including a variety of pollinators like butterflies and bees, as well as birds, small mammals, amphibians, reptiles, and fish.
- Have deep-rooted plants that build high-quality soils and help filter water.
- Great places to watch birds, view wildflowers, and photograph wildlife. They also offer excellent hunting opportunities.
- Remnant native grassland and native planting can benefit both livestock and wildlife when well managed.
- Native grasslands also can produce valuable native seed resources.



Regal fritillary



Diamond Grove Prairie  
Conservation Area in  
Newton County

## Explore Missouri's Grasslands

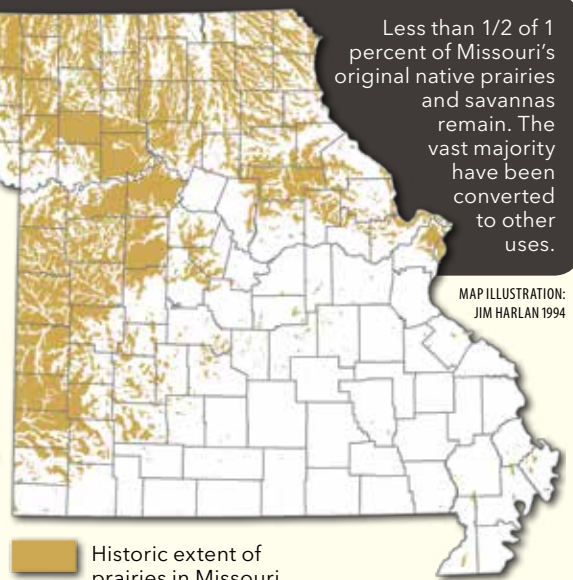
Less than 1/2 of 1 percent of Missouri's original native prairies and savannas remain. The vast majority have been converted to other uses.

MAP ILLUSTRATION:  
JIM HARLAN 1994

**Sand prairies**  
border the Mississippi River  
in a few small areas in the  
southeastern and northeastern  
parts of the state.



Prairie  
fringed  
orchid



Historic extent of  
prairies in Missouri.

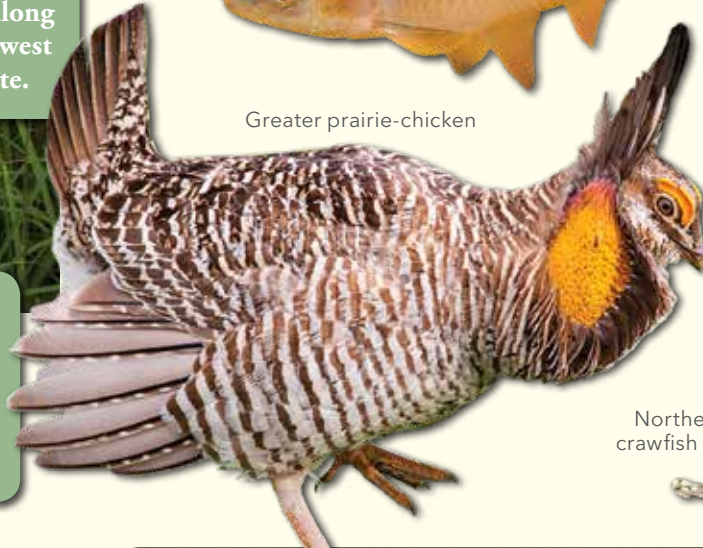
**Glaciated prairies**  
occur north of the Missouri River  
where glaciers created deep, fertile soil.

**Loess Hills prairies**  
border the Missouri  
River floodplain along  
the extreme northwest  
corner of the state.

Topeka shiner



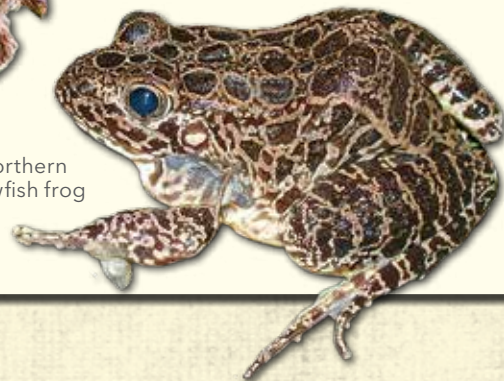
Greater prairie-chicken



**Unglaciated prairies**  
occur south of  
the Missouri  
River along the  
western border of  
the state where the  
soils are shallower  
than those found  
in glaciated  
regions.

**Wet prairies**  
border marshes,  
floodplains, or areas with  
groundwater seepage in the  
glaciated and Osage Plains.

Northern  
crawfish frog



## Threats to Missouri Prairies and Savannas

- Conversion to nonnative pasture, row crop, and commercial and residential development has resulted in fragmentation of the prairie landscape.
- Letting trees and shrubs grow into them and take them over.
- Invasive, nonnative plants like sericea lespedeza and Johnson grass that choke out native plants.
- Continuous, poorly managed grazing that may kill plants, compact soil, and cause erosion.

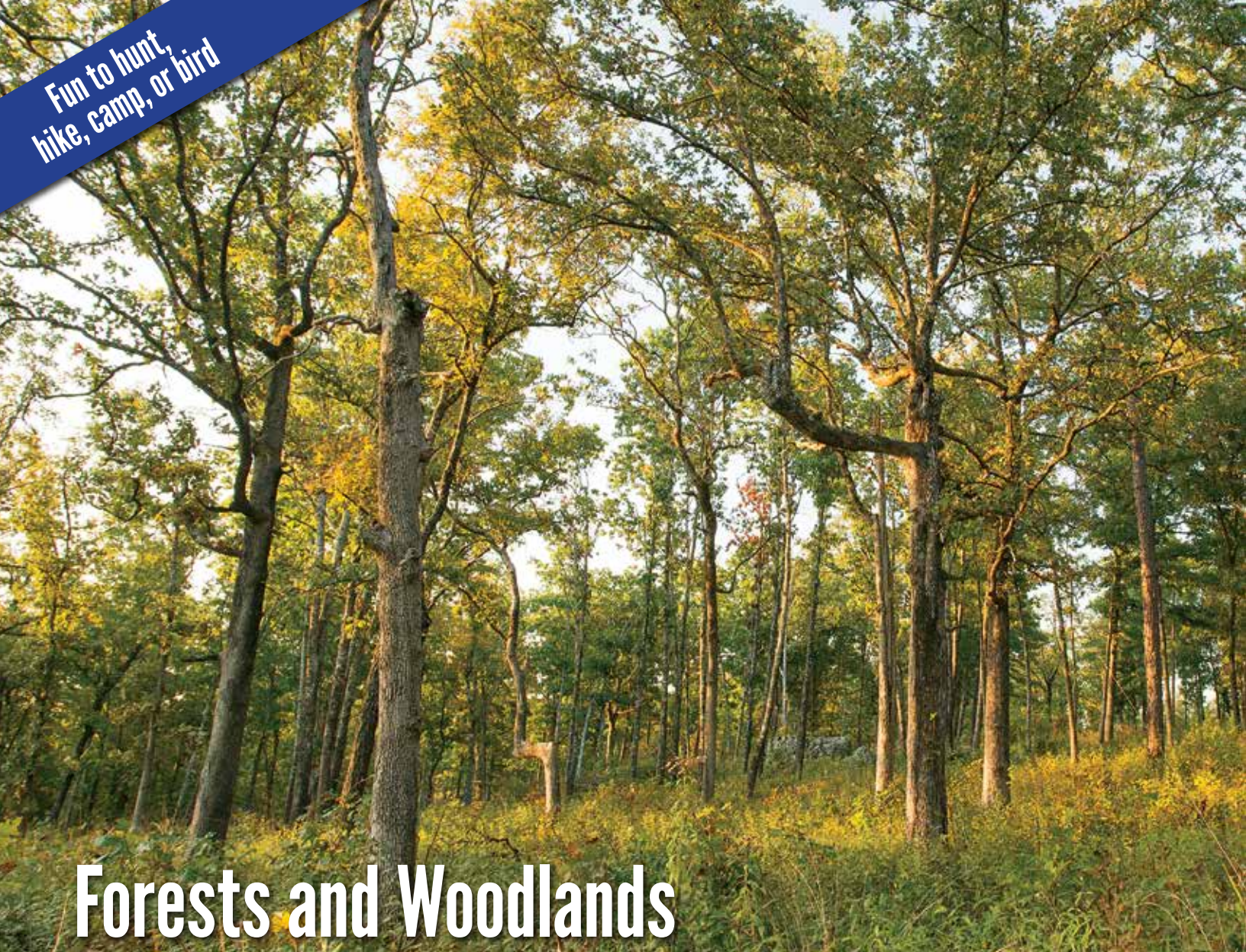
## You Can Help Missouri's Grasslands

- Visit a prairie natural area and support a prairie conservation group like the Missouri Prairie Foundation.
- If you own rural property, or you farm or ranch, start restoring, reconstructing, and enhancing your grasslands, or a portion of them, with native plants.
- Learn to safely use prescribed fire to control trees and shrubs and reinvigorate native grasses and wildflowers on your property. Check [mdc.mo.gov/events](http://mdc.mo.gov/events) for prescribed fire workshops in your region.
- Implement conservation grazing practices that benefit livestock and wildlife.
- Control invasive plants threatening your grassland.

See Pages 20–21 for more resources that can help you restore prairies and savannas.



Fun to hunt,  
hike, camp, or bird



# Forests and Woodlands

Did you know that wooded lands cover about one-third of Missouri? That’s approximately 15.5 million acres. Topography, sun exposure, moisture availability, soil type, disturbance history, and other factors have helped shape these wooded lands, which we refer to as either forests or woodlands.

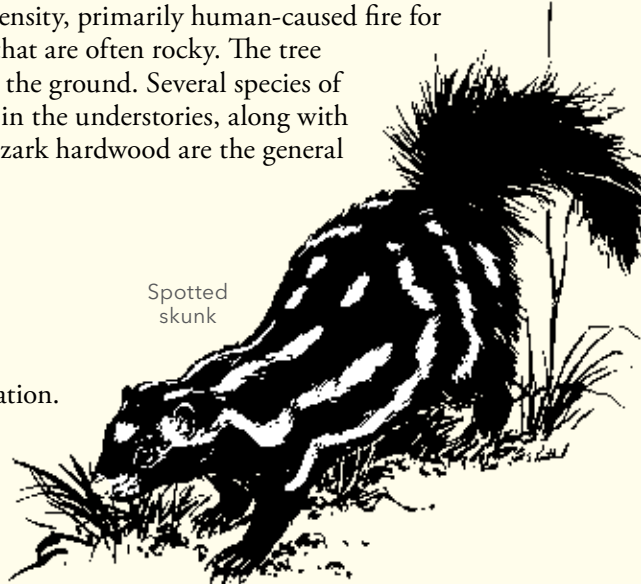
Forests typically have a closed canopy with a dense, multilayered, mid- and understory consisting of trees, vines, shrubs, ferns, and herbs. Forests typically occur on north- and east-facing slopes as well as in floodplains. Plants that thrive in the forest mid- and understories can tolerate heavy shade. We can group Missouri forests into four general categories: Ozark hardwood, Ozark oak-pine, glaciated (meaning they are found in north Missouri on the landscape formed by glaciers), and bottomland forests.

Woodlands, like prairies and savannas, developed with frequent but low-intensity, primarily human-caused fire for centuries before European settlement. Woodlands usually occur on drier sites that are often rocky. The tree canopy and midstory is more open, making way for plenty of sunlight to reach the ground. Several species of oak dominate Missouri’s woodland canopies, while grasses and sedges flourish in the understories, along with smaller shrubs and wildflowers. Glaciated, Ozark oak-pine, Ozark pine, and Ozark hardwood are the general categories of woodlands that occur in Missouri.

## Forests and Woodlands Work for Plants, Animals, and People

- Provide abundant nesting, shade, cover, and feeding areas for wildlife.
- Protect and enhance water and air quality and improve surface water infiltration.
- Provide excellent recreational opportunities, including hiking, hunting, fishing, camping, birding, and many more.
- Provide timber and wood products.

Spotted  
skunk





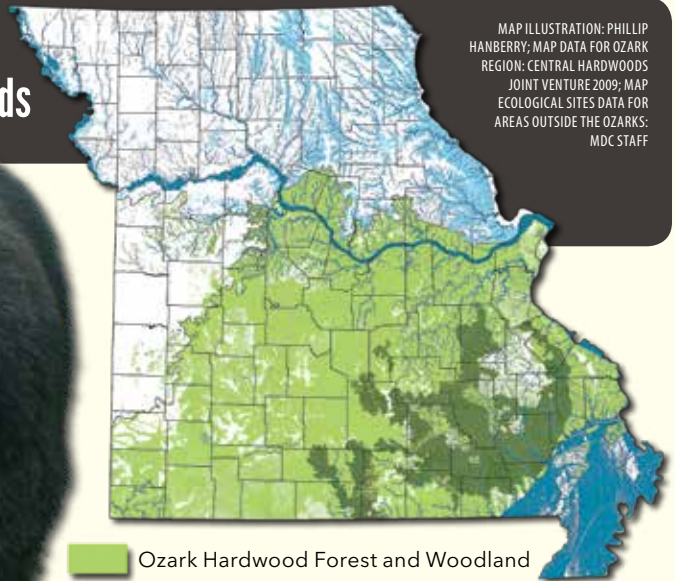
Ozark oak-pine  
woodland at  
Peck Ranch  
Conservation Area

## Explore Missouri's Forests and Woodlands

MAP ILLUSTRATION: PHILLIP  
HANBERRY; MAP DATA FOR OZARK  
REGION: CENTRAL HARDWOODS  
JOINT VENTURE 2009; MAP  
ECOLOGICAL SITES DATA FOR  
AREAS OUTSIDE THE OZARKS:  
MDC STAFF



Black bear



- Ozark Hardwood Forest and Woodland
- Ozark Oak-Pine and Pine Forest and Woodland
- Glaciated Hardwood Forest and Woodland
- Bottomland Forest

What's the difference between a  
forest and a woodland?

Forests have a closed canopy  
with a dense, multilayered  
understory. In woodlands,  
the canopy and midstory are  
more open.



Spotted salamander



Bloodroot



Three-toed  
box turtle



Prothonotary  
warbler

## Threats to Missouri Forests and Woodlands

- Clearing and fragmentation for commercial and residential development, row crops, and pasture development.
- Poor timber harvest practices.
- Forest and woodland health concerns, including introduced diseases and invasive species such as feral hogs, bush honeysuckles, and emerald ash borers.
- Livestock grazing.

## You Can Help Missouri's Forests and Woodlands

- Safely perform periodic prescribed fires on your property (Primarily for woodlands, but some low-intensity burns for forests). Check [mdc.mo.gov/events](http://mdc.mo.gov/events) for prescribed fire workshops in your region.
- Consult a professional forester to develop a forest and woodland management plan for your property. Work with them to schedule management activities, such as timber harvest, to help meet your goals.
- Learn about trees that provide important food and shelter for wildlife.
- Restore converted forests and woodlands to a more natural state by planting native seedlings each year. Find the latest Missouri State Forest Nursery seedling order form and planting guide at [mdc.mo.gov/seedlings](http://mdc.mo.gov/seedlings).
- Fence livestock out of your forests and woodlands.
- Volunteer. Become a Forestkeeper at [forestkeepers.org](http://forestkeepers.org).

See Page 20 for more resources that can help you restore forests and woodlands.



Great views,  
wildflowers, and wildlife



# Glades

These dry, hot, and sunny openings in woodlands occur where the bedrock is close to the surface, where the soil is very shallow. It takes a tough plant to live on a glade, and some plants we usually associate with deserts are right at home here. But glades also feature a rich variety of native grasses and prairie wildflowers. These in turn support an abundance of grasshoppers and other insects, including pollinators, as well as reptiles and amphibians.

Historically, natural lightning fires that occurred during severe drought years and fires set by Native Americans and early settlers kept glades open. Fire suppression, which we see today, allows native red cedar to colonize and shade out our glade wildflowers and grasses. A red cedar thicket provides protection from the wind, but it provides very little wildlife food.

Glades are categorized by the type of bedrock they developed on. Limestone, dolomite, chert, sandstone, and igneous are the most common forms of bedrock found within Missouri's glade communities.

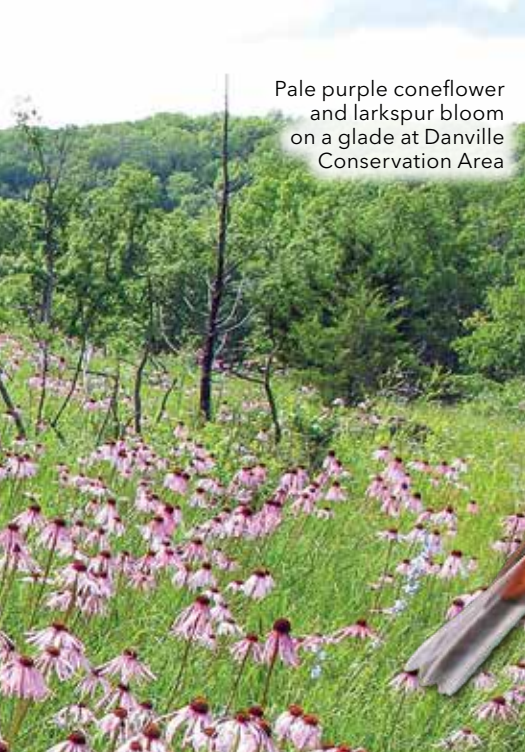
## Glades Work for Plants, Animals, and People

- Highly diverse communities provide habitat for many plants and animals that live only in glade ecosystems.
- Important for a variety of pollinators like butterflies and bees.
- Popular recreation areas for hiking, birding, and nature viewing. They often offer beautiful vistas of the surrounding landscape.
- Provide natural "food plots" for wildlife in a heavily wooded landscape and also provide good locations for turkey nesting and brood-rearing habitat.

Texas brown  
tarantula





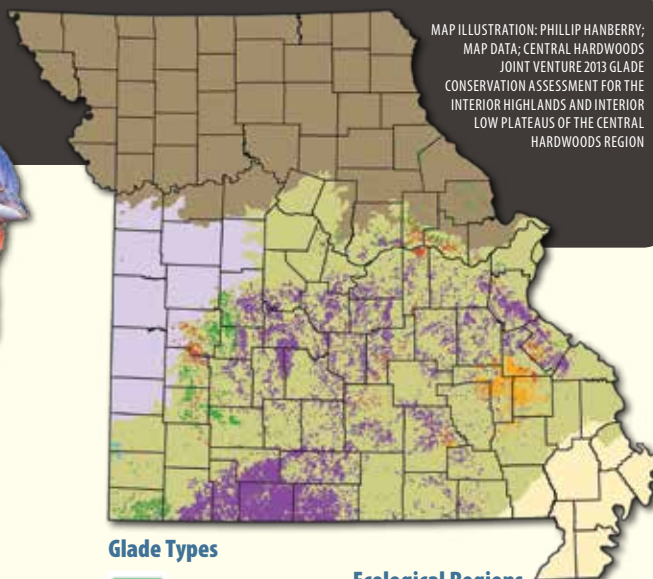


Pale purple coneflower and larkspur bloom on a glade at Danville Conservation Area

## Explore Missouri's Glades



Painted bunting



MAP ILLUSTRATION: PHILLIP HANBERRY;  
MAP DATA: CENTRAL HARDWOODS  
JOINT VENTURE 2013 GLADE  
CONSERVATION ASSESSMENT FOR THE  
INTERIOR HIGHLANDS AND INTERIOR  
LOW PLATEAUS OF THE CENTRAL  
HARDWOODS REGION

### Glade Types

- Limestone Glades
- Dolomite Glades
- Chert Glades
- Sandstone Glades
- Igneous Glade

### Ecological Regions

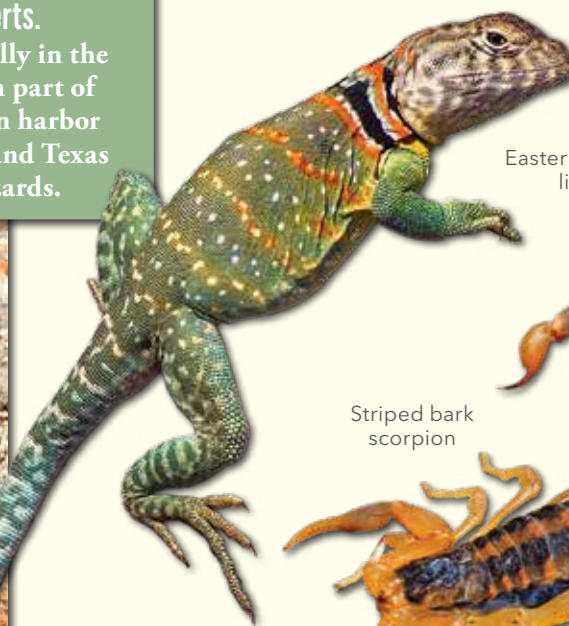
- Central Dissected Till Plains
- Mississippi River Alluvial Basin
- Ozark Highlands
- Osage Plains



Rock pink colors the chert glades at Wildcat Glade Natural Area

Missouri's glades are like mini-deserts.

Some, especially in the southwestern part of the state, even harbor roadrunners and Texas horned lizards.



Eastern collared lizard



Striped bark scorpion

## Threats to Missouri Glades

- Eastern red cedar encroachment and nonnative invasive species like sericea lespedeza and spotted knapweed.
- Plant digging and wildlife collection.
- Livestock grazing.
- Commercial and residential development.
- Rock quarrying.

## You Can Help Missouri's Glades

- Cut and remove red cedars from your overgrown glades to revive these beautiful habitats.
- Safely perform prescribed fires on your property to suppress woody vegetation, especially red cedar.
- Install fencing to eliminate livestock grazing.
- Protect your glade from development and exploitation.
- Learn what invasive species threaten your glades and how to control them.

See Page 20 for more resources that can help you restore Missouri's glades.



Home to many  
rare plants and animals

# Cliffs and Talus

Shaped and molded by the flow of water or weathering, such as wind erosion and freeze and thaw cycles, cliff and talus communities are unique. Cliffs are steep or upright exposures of bedrock or loess soil. These communities vary depending on the bedrock exposed, which could include chert, limestone-dolomite, sandstone, and igneous. Soft-stemmed plants are scarce in these communities, but they do exist, often growing in the crevices where soil may be present. Mosses, liverworts (small, flowerless green plants), and lichens are often plentiful on the exposed rock surfaces.

Talus is the rubble of weathered bedrock that collects at the cliff base. Limestone-dolomite and igneous talus communities are most common in Missouri.

## Cliffs and Talus Work for Plants, Animals, and People

- Provide nesting and overwintering habitat for wildlife like birds and snakes and are home to several rare and vulnerable plants and animals.
- Popular destinations for hiking and nature viewing and often offer beautiful vistas of the surrounding landscape.

British soldier lichen





Vilander Bluff  
Natural Area in  
Crawford County

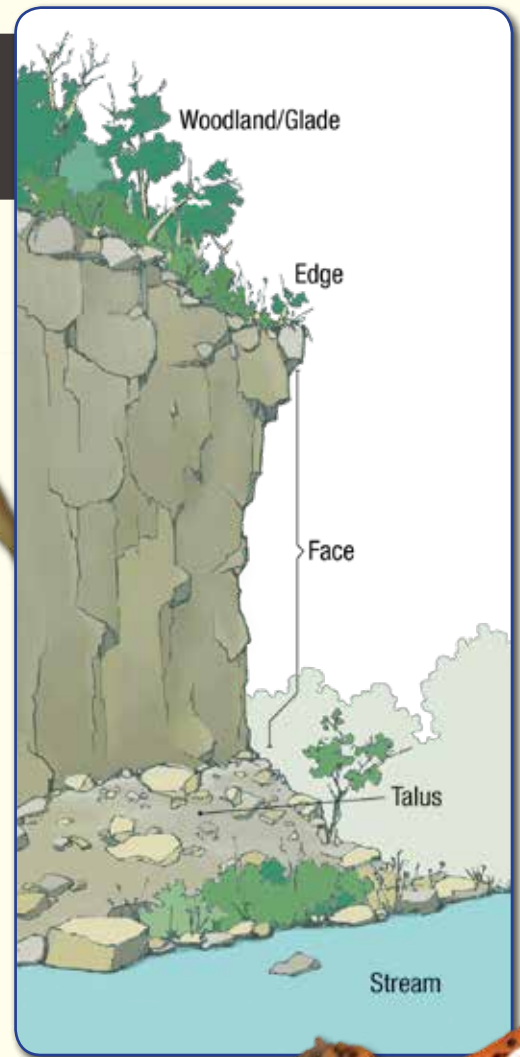
## Explore Missouri's Cliffs and Talus Communities



Columbine



Eastern phoebe

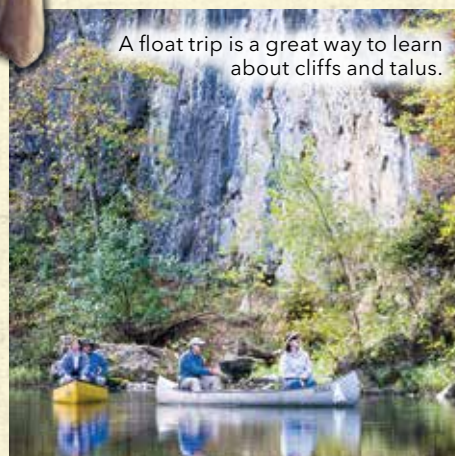


Cave salamander

You may not think of vertical cliffs and slopes of rubble as important wildlife habitat, but they support stress-tolerant trees like Ashe's juniper, cliff-nesting birds like the eastern phoebe, and many species of rodents and reptiles.

### Threats to Missouri Cliffs and Talus

- Cliff edge residential and commercial development.
- Invasive species such as feral hogs and goats.
- Alterations to adjacent woodlands or forests.
- Rock quarrying.
- Excessive visitation (including rock climbing) can harm the cliff face.



A float trip is a great way to learn about cliffs and talus.

### You Can Help Missouri's Cliffs and Talus

- Learn what invasive species threaten cliffs and talus and how to control them.
- Protect cliff and talus areas from development and exploitation.

See Page 20 for more resources that can help you restore cliffs and talus.



Where does your  
drinking water come from?

# Caves and Karst

If you live in Missouri, you probably know the word “karst.” It refers to areas of porous limestone or dolomite containing deep **fissures** and sinkholes as well as underground cave systems and streams. With more than 7,000 caves identified in the state, Missouri is known as “The Cave State.” There are five primary regions in Missouri where cave and karst communities are most prominent: Hannibal Karst, St. Louis Karst, Perryville Karst, the Salem Plateau, and the Springfield Plateau. Within these regions there are several types of karst communities including **terrestrial** and **aquatic** cave systems, sinkholes, **losing streams**, and springs.

Cave and karst ecosystems are unique in that many of them are devoid of sunlight, and the wildlife that reside in them has evolved adaptations to survive in darkness and isolation. Some cave animals don’t even have eyes, and most animals that spend their entire lives underground lack pigmentation, or color.

Colony of federally endangered gray bats

## Caves and Karst Work for Plants, Animals, and People

- Home to more than 900 unique, cave-dwelling fish and wildlife, including threatened and endangered species.
- Caves provide year-round or winter shelters for many bats, which help control nocturnal insects, including pests to agriculture or people.
- Essentially underground rivers and reservoirs, karst features provide a source of drinking water for many Missourians.

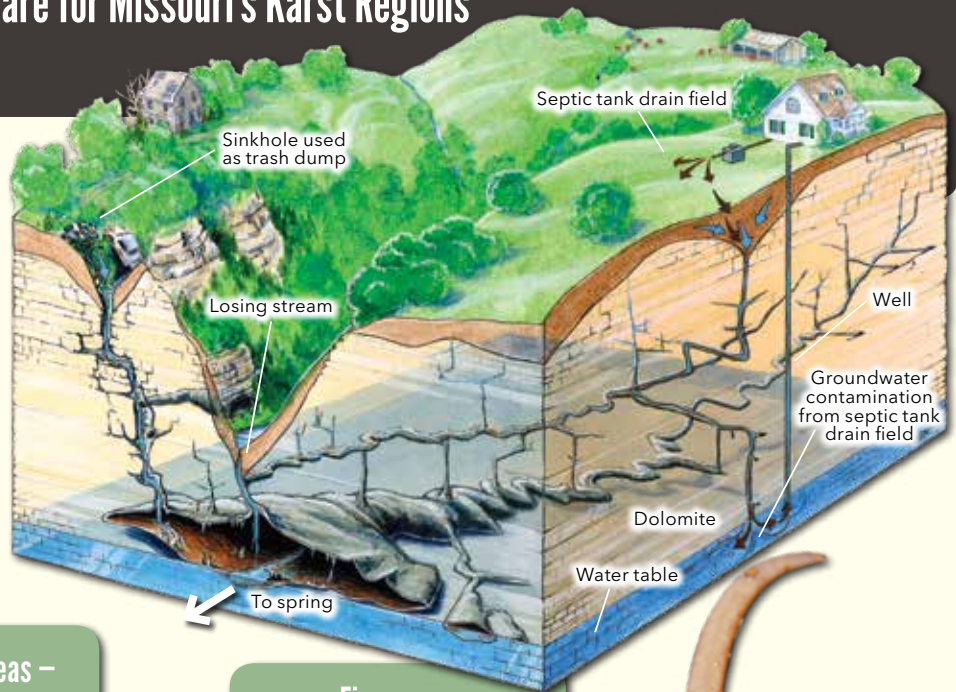




Onondaga Cave in  
Crawford County

## Care for Missouri's Karst Regions

**Losing stream –**  
a surface stream that  
loses a significant  
amount of its flow to  
the subsurface through  
bedrock



**Karst recharge areas –**  
the land through  
which water moves into  
groundwater or into  
springs or caves.

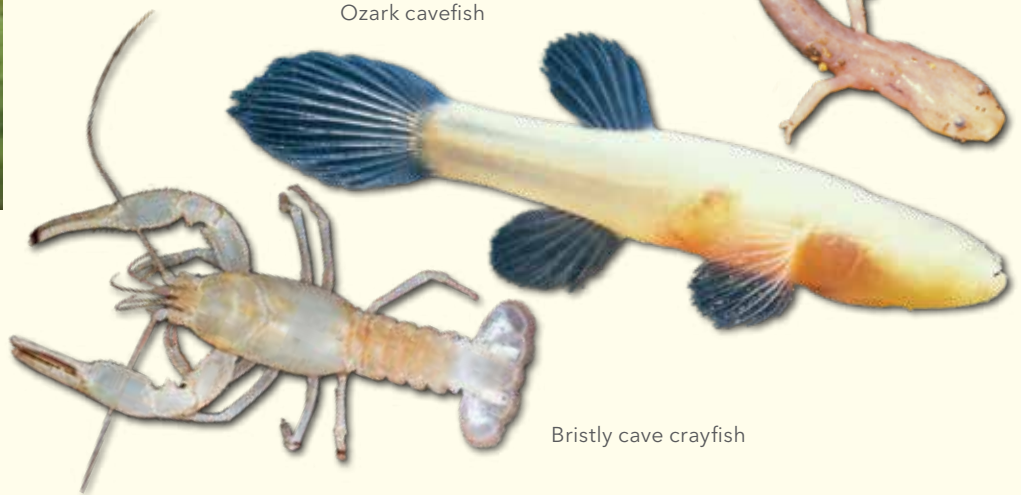
**Fissures –**  
long, narrow openings  
made by cracking or  
splitting

Grotto  
salamander

**Aquatic –**  
caves with flowing water

**Terrestrial –**  
caves that are land-based  
and without flowing water

Ozark cavefish



Bristly cave crayfish

## Threats to Missouri Caves and Karst

- Groundwater pollution and sedimentation.
- Human disturbance and vandalism.
- Invasive species, such as nonnative crayfish, and diseases, such as white-nose syndrome.

## You Can Help Missouri's Caves and Karst

- Limit or prevent human disturbance.
- Clean up your sinkhole and properly dispose of the trash, tires, etc.
- Exclude livestock from springs and supply alternative watering sources.
- Manage and promote beneficial environmental practices in **karst recharge areas**.
- Don't dump live bait, such as crayfish, into streams, especially in karst regions.
- Join a cave and karst conservation group and help monitor water quality and cave ecosystems.

See Page 20 for more resources that can help you protect caves and karst.





# Wetlands

Wetlands are transition zones between land and water-based environments. Because of this, they share some characteristics of both, yet they have their own unique qualities belonging to neither land nor water habitats. Wetlands vary from permanently flooded sloughs to areas that have saturated soil during only part of the year. There are five general types of wetlands that are grouped according to differences in soil, water presence and duration, and vegetation. They include seasonal, emergent marsh, shrub-scrub, forested swamp, and fens and seeps.

Wetlands support a wide variety of plants, birds, reptiles, amphibians, fish, mammals, and insects. Plants and animals living in wetland communities have adapted to permanent or changing water levels. Many species of fish and wildlife depend on wetland communities to spawn or nest every year. At least 110 of the more than 430 bird species recorded in Missouri depend on wetlands for part of their life cycle. Additionally, over 200 Missouri species of conservation concern use wetlands as their primary habitat. The staggering amount of resources wetlands produce help support plants and animals living in streams and on adjoining floodplains and uplands.

Historically, natural wetlands dominated the floodplains and river deltas in Missouri. During the past 150 years, many were converted to agricultural land. It is important to preserve our few remaining natural wetlands and to restore and reconstruct degraded wetlands wherever possible.

## Wetlands Work for Plants, Animals, and People

- Function as biological filters that remove sediments and other pollutants from surface waters.
- Act as natural sponges, reducing flood severity by slowly releasing excess water back into streams or the groundwater table.
- Biologically productive, with a great diversity of plants and animals including providing important breeding, spawning, and nursery habitat for amphibians, fish, and other wildlife.
- Used extensively by migratory birds, providing opportunities for waterfowl hunting and excellent places for birding.



Swamp milkweed thrives on the Mertensmeyer family's restored wetland in Carroll County.

## Explore Missouri's Wetlands

The map outlines the continentally significant migratory water-bird habitats from the North American Waterfowl Management Plan. The areas outlined are also the best areas to view larger wetland systems. Fens, however, do not fall within the highlighted section because they are found primarily scattered throughout the Ozarks and the glaciated plains.



At least 110 of the more than 430 bird species recorded in Missouri depend on wetlands for part of their life cycle.

Three-toed amphiuma

Swamp rabbit

Pickereel weed

Digger crayfish

King rail

## Threats to Missouri Wetlands

- System alteration and fragmentation including draining, filling, ditching, levees, dikes, and reservoirs.
- Land conversion, including bottomland commercial and residential development and agriculture.
- Water pollution and excessive sedimentation.
- Invasive, nonnative species, such as purple loosestrife, reed canary grass, and feral hogs.

## You Can Help Missouri's Wetlands

- Protect and conserve existing wetlands.
- Restore and reconstruct previously converted wetland areas or build new ones where appropriate.
- Enhance your wetlands for wildlife by adding reptile basking logs or rocks and brush for fish breeding, and by encouraging native wetland plants.
- Maintain a buffer of native vegetation around your wetland and exclude livestock.
- Learn which invasive species threaten your wetland and how to control them.

See Page 20 for more resources that can help you restore wetlands.





Great  
fishing and floating

# Rivers and Streams

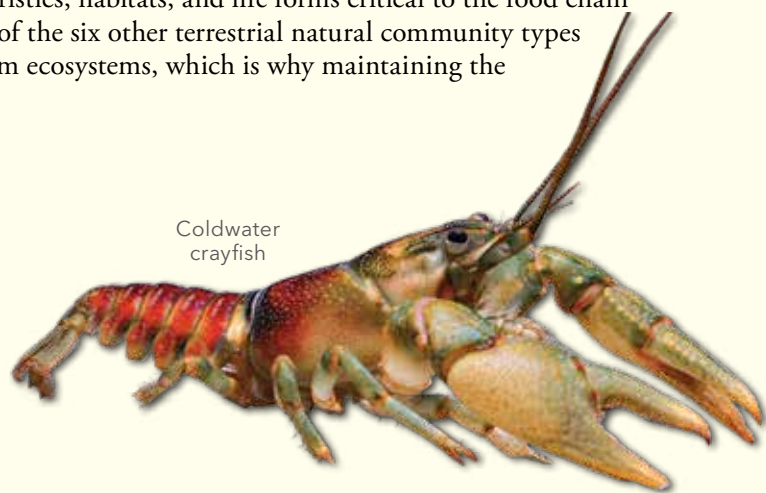
With more than 110,000 miles of flowing water in Missouri, our river and stream ecosystems are vitally important. We can categorize Missouri into four general stream regions: grassland/prairie, Ozark, Mississippi lowland, and big river.

When we think about rivers and streams, we need to understand their watersheds. Natural landscape divisions define a watershed's boundary. As precipitation falls across the landscape, some is absorbed into groundwater and some runs downhill, forming stream channels. Both groundwater and runoff generate and maintain flowing streams. From upland **headwaters**, streams carry sediment and organic matter, which yield nutrients that can provide habitat as well as nourish fish and other aquatic life. On the other hand, excessive soil erosion, pollutants, and trash in a stream can be harmful to aquatic and human communities. As headwater streams unite, enlarge, and move through floodplains, they often change from **seasonal streams** into larger perennial streams — streams that flow year-round due to their large watershed or connection with groundwater.

Each juncture along a stream's pathway houses unique characteristics, habitats, and life forms critical to the food chain and connectivity of the river system as a whole. The overall health of the six other terrestrial natural community types we've described directly influences the health of the river and stream ecosystems, which is why maintaining the quality of each natural community is essential.

## Rivers and Streams Work for Plants, Animals, and People

- Home to a multitude of aquatic species and provide food and water for other wildlife and plant species.
- People depend on river and stream communities for drinking water, food, manufacturing, irrigation, navigation, energy production, and outdoor recreation.



Coldwater  
crayfish



Shoal Creek in  
Newton County

## Explore Missouri's Rivers and Streams

MAP ILLUSTRATION:  
NIGH AND SCHROEDER.  
ATLAS OF MISSOURI  
ECOREGIONS 2002

**Headwaters –**  
streams at the beginning  
of a large stream or river.

**Seasonal streams –**  
only have flowing water  
during parts of the year. These  
streams may collect water in  
pools during drier months but  
may not flow during this time.



Dollar sunfish



Eastern  
hellbender

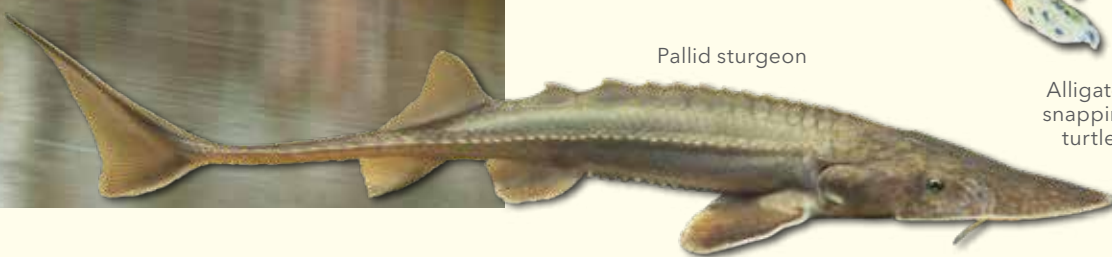


### Stream Regions

- Grassland/Prairie
- Ozark
- Mississippi Lowland
- Big River



Bald eagle



Pallid sturgeon

Alligator  
snapping  
turtle



## Threats to Missouri Rivers and Streams

- Urbanization, suburbanization, and increased impervious surfaces like paved roads and parking lots.
- Water pollution from contaminated wastewater discharges.
- Runoff from urban, suburban, rural, and agricultural areas.
- Excessive water withdrawals from groundwater or surface water that can deplete water from streams.
- Separating streams from their floodplains, and dams or other barriers that prevent fish and wildlife from traveling up- or downstream.
- Invasive, nonnative species such as zebra mussels, Asian carp, and hydrilla.
- Improper instream gravel mining and stream-bank and channel manipulation.

## You Can Help Missouri's Rivers and Streams

- Join a Missouri Stream Team and get involved. To get more information visit **[mostreamteam.org](http://mostreamteam.org)**.
- Learn about and do your part to stop the spread of invasive species, and teach others to do the same.
- Where appropriate, reestablish streamside corridors by planting native trees, shrubs, grasses, and wildflowers.
- Be careful when farming, grazing, building, or logging to limit sediment loss and other pollution, and plant native vegetation.
- Contact MDC Private Land Services staff for help with installing proper stream crossings for equipment and livestock. Find your private land conservationist at **[mdc.mo.gov/contact-engage](http://mdc.mo.gov/contact-engage)**.
- Fence livestock out of waterways.
- Replace in-stream barriers, such as perched culverts and low-water crossings, to encourage natural movement of species.
- Replace hard surfaces with porous surfaces or with native vegetation to allow stormwater infiltration and slow runoff.

See Page 20 for more resources that can help you restore rivers and streams.

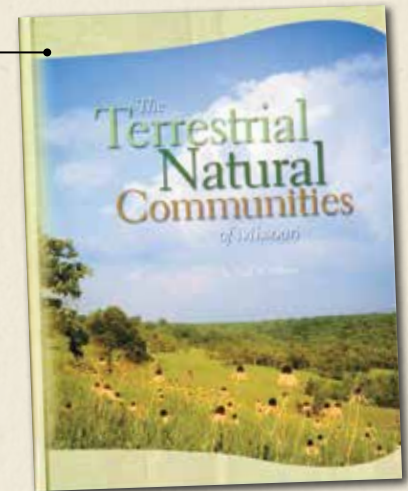


# Explore More, Conserve More

Once you've discovered the amazing diversity of Missouri's seven natural communities, you'll want to experience them for yourself. If you own land, you may even want to improve or restore your own natural communities. You can also join a natural community conservation group. Use the resources below to explore more and conserve more.

## Dig into the details

Authored by Paul W. Nelson, this 500-page guide features descriptions of Missouri's terrestrial natural community types as well as guidelines for conservation planning and ecological management. The 2010 edition includes 35 new color photographs and updated information. Published by the Missouri Natural Areas Association. \$34.95. Buy online at [mostateparks.com](http://mostateparks.com).



## Missouri's Online Habitats Field Guide

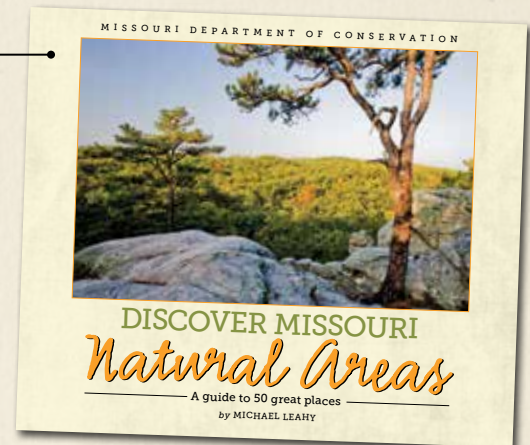
Explore this deep, detailed collection of information about Missouri's statewide habitat systems at [mdc.mo.gov/habitats](http://mdc.mo.gov/habitats).

## Missouri State Wildlife Action Plan

Organized by natural community type (and informed to a great extent by *The Terrestrial Natural Communities of Missouri*), the *Missouri State Wildlife Plan* identifies the best opportunities and outlines methods for conserving Missouri's natural heritage for the 21st century and beyond. Find it at [short.mdc.mo.gov/ZqN](http://short.mdc.mo.gov/ZqN).

## Visit Missouri natural areas

The Missouri Natural Areas System protects the best remaining examples of our state's natural heritage. In this beautiful, user-friendly guide, author Mike Leahy, MDC's natural areas coordinator, provides natural history information that brings to life the outstanding geological, biological, and ecological features of each area. Maps and stunning photographs compliment the text. \$11. Buy online at [mdcnatureshop.com](http://mdcnatureshop.com), or call toll-free 1-877-521-8632, or stop by your nearest regional office or nature center.

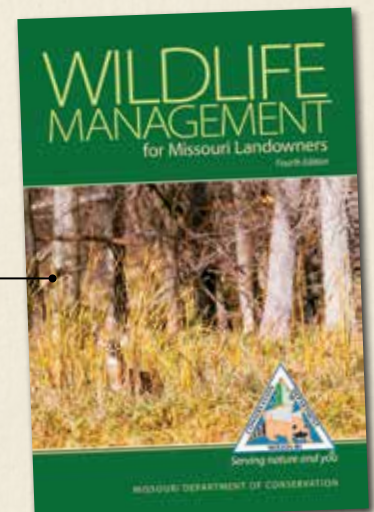


## Help natural communities where you live

**Plant and seed the native plants that originally occurred on your land.** Grow Native!, a program of the Missouri Prairie Foundation, can help you get started. Visit [grownative.org](http://grownative.org).

**Consult your private land conservationist (PLC).** The Missouri Department of Conservation's Private Land Services Division employs PLCs to help rural landowners create, restore, and enhance wildlife habitat on their property. To find the PLC for your county, visit [mdc.mo.gov/contact-engage](http://mdc.mo.gov/contact-engage).

Updated in 2017, this **free booklet** provides information on the latest wildlife habitat management techniques for grasslands, native prairies, wetlands, uplands, and forests, woodlands, and savannas. To get your copy, call 573-522-0108, or email [pubstaff@mdc.mo.gov](mailto:pubstaff@mdc.mo.gov).







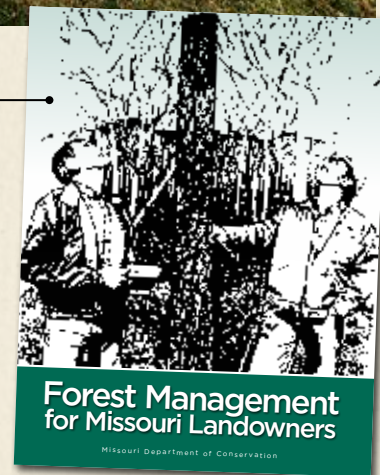
Some natural communities like glades, grasslands, and woodlands need periodic prescribed fire to maintain their open character and species composition.

DAVID STONER

Updated in 2017, this booklet is **free** to Missouri residents. It provides the latest information on forest and woodland management best practices, including sustainable timber harvest. To get your copy, call 573-522-0108, or email [pubstaff@mdc.mo.gov](mailto:pubstaff@mdc.mo.gov).

## Join or support a conservation group

Missouri has many important volunteer organizations that are dedicated to helping people restore and conserve our state's natural communities. We've included a small selection here, and we encourage you to browse for more online.



### Missouri Prairie Foundation

For 52 years, the Missouri Prairie Foundation has been conserving Missouri's prairies and other native grasslands, some of the most imperiled habitats on the planet. Become a member at [moprairie.org](http://moprairie.org).

### Missouri Forestkeepers Network

This free program of the Missouri Department of Conservation in partnership with Forest ReLeaf of Missouri provides citizens with scientific information on tree care and management. Participants take an active role in the care of our state's forests through a variety of activities and training. Join at [forestkeepers.org](http://forestkeepers.org).

### Missouri Speleological Survey

Members of this nonprofit corporation study and research Missouri's speleology. They actively promote cave research within the state and cave conservation as a means of ensuring the continued availability of caves and their contents in the natural state. To learn more, visit [mospeleo.org](http://mospeleo.org).

### Missouri Stream Team

This working partnership of citizens who are concerned about Missouri streams provides an opportunity for everyone to get involved in river and stream conservation. Join at [mostreamteam.org](http://mostreamteam.org).

### Missouri Master Naturalist™

This community-based, natural-resource education and volunteer service program for adults is sponsored by the Missouri Department of Conservation and University of Missouri Extension. To learn more, visit [extension2.missouri.edu](http://extension2.missouri.edu).





NOPPADOL PHOTONG

Mint Springs Conservation Area



*Serving nature and you*

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